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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/543,622

04/05/2000

Richard B. Diver JR.

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10/17/2005

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EXAMINER

PRITCHETT, JOSHUA L

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/543,622

Applicant(s)

DIVER ET AL.

Examiner

Joshua L. Pritchett

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-25 and 27-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-23, 25 and 27-29 is/are rejected.
- 7) ☒ Claim(s) 14 and 24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

This action is in response to Amendment after non-final rejection filed August 24, 2005.

Claims 1, 12, 14 and 25 have been amended as requested by the applicant.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1--25 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stone ("Status of Glass Reflector Technology for Heliostats and Concentrators") in view of Nicolas (US 4,320,164).

Regarding claim 1, Stone teaches a solar collector comprising a glass mirror (GLASS); a front sheet (STEEL); a core (HONEYCOMB) comprising a honeycomb core material; and a back sheet (STEEL); wherein the back of the mirror is affixed to the front sheet, the front sheet is affixed to the core and the core is affixed to the back sheet (Fig. 9). Stone teaches steel as the material for both the front and back sheet, therefore the thermal expansion coefficients for the front and back sheet would be similar. Stone lacks reference a curved mirror. Nicolas teaches a curved mirror (Fig. 6). It would have been obvious to one of ordinary skill in the art at the time

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the invention was made to have the mirror of Stone be curved as taught by Nicolas for the purpose of concentrating the solar energy by focusing the light onto a collector.

Regarding claim 2, Stone teaches a sealing strip (EPOXY ADHESIVE) positioned between the glass mirror and the front sheet (Fig. 9).

Regarding claim 3, Stone teaches the invention as claimed but lacks reference to a EPDM sealing strip. EPDM is an extremely well known rubber sealant used with mirrors. Official Notice is taken. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the sealing strip of Stone made of EPDM for the purpose of preventing moisture from contacting the interface of the mirror and the front sheet.

Regarding claim 4, Stone teaches the glass mirror comprises a silvered backing (Fig. 5).

Regarding claim 5, Stone teaches the front sheet and the back sheet comprise carbon steel (Fig. 9).

Regarding claim 6, Stone teaches the invention as claimed but lacks reference to the gauge of the steel. It is extremely well known in the art to form support structures of steel with a gauge between **approximately** 24 and 28. Emphasis added. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the steel of Stone be a gauge between 24 and 28 for the purpose of providing sufficient support to maintain the form of the mirror structure.

Regarding claim 7, Stone teaches the core material comprises a honeycomb structure (Fig. 9).

Regarding claim 8, Stone teaches the honeycomb core material comprises aluminum (Note from Fig. 9).

Regarding claim 9, Stone teaches the invention as claimed but lacks reference to the thickness of the aluminum. It is extremely well known in the art to form support structure of aluminum with a thickness between **approximately** 0.015 and 0.004 inches. Emphasis added. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the aluminum of Stone have a thickness between 0.015 and 0.004 inches for the purpose of supporting the weight of the mirror while remaining light enough to be easily transportable.

Regarding claim 10, Stone teaches the invention as claimed but lacks reference to the use of a foam material for the core. Nicolas teaches the use of a foam material to foam (77) the core of a solar collector (Fig. 6). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the core of the Stone invention be a foam material as taught by Nicolas for the purpose of maintaining a curve in the mirror without having to cut and shape the aluminum of Stone.

Regarding claim 11, Stone teaches the core material comprises a cellulose based material (Fig. 11).

Regarding claim 12, Stone teaches a solar collector comprising a glass mirror (GLASS); a front sheet (STEEL); a core (HONEYCOMB) comprising a honeycomb core material; and a back sheet (STEEL); wherein the back of the mirror is affixed to the front sheet, the front sheet is affixed to the core and the core is affixed to the back sheet (Fig. 9). Stone lacks reference to the use of a mandrel. Nicolas teaches the use of a mandrel to form a curvature in a mirror under pressure (Fig. 6). Pressure is a measure of force over a given area. The pressure in Nicloas is equal to the weight of the cement poured over the mirror divided by the total area of the back

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side of the mirror. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Stone invention include the mandrel of Nicolas for the purpose of achieving a repeatable curvature to the mirror surface for precise and predetermined focusing of the solar light for each collector.

Regarding claim 13, Stone teaches a sealing strip (EPOXY ADHESIVE) positioned between the glass mirror and the front sheet (Fig. 9).

Regarding claims 14 and 24, Stone teaches the invention as claimed but lacks reference to the use of a mandrel. Nicolas teaches the use of a mandrel to form a curvature in a mirror (Fig. 6). Nicolas teaches many small mirrors stacked atop the mandrel. Each of the mirrors can be considered a solar collector, therefore the Nicolas invention teaches simultaneous formation of a plurality of solar collectors. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Stone invention include the mandrel of Nicolas for the purpose of achieving a repeatable curvature to the mirror surface.

Regarding claims 15 and 16, Stone teaches the invention as claimed but lacks reference to the use of a vacuum. It is extremely well known in the art to use a vacuum to remove air from between layers of materials used to create optical elements to more securely adhere the layers together. Official Notice is taken. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Stone invention include the use of a vacuum as is known in the art for the purpose of securely adhering the layers of Stone together.

Regarding claim 17, Stone teaches the invention as claimed but lacks reference to a EPDM sealing strip. EPDM is an extremely well known rubber sealant used with mirrors. Official Notice is taken. It would have been obvious to one of ordinary skill in the art at the time

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the invention was made to have the sealing strip of Stone made of EPDM for the purpose of preventing moisture from contacting the interface of the mirror and the front sheet.

Regarding claims 18 and 27, Stone teaches the glass mirror comprises a silvered backing (Fig. 5).

Regarding claims 19 and 28, Stone teaches the front sheet and the back sheet comprise carbon steel (Fig. 9).

Regarding claims 20 and 29, Stone teaches the invention as claimed but lacks reference to the gauge of the steel. It is extremely well known in the art to form support structures of steel with a gauge between **approximately** 24 and 28. Emphasis added. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the steel of Stone be a gauge between 24 and 28 for the purpose of providing sufficient support to maintain the form of the mirror structure.

Regarding claim 21, Stone teaches the core material comprises a honeycomb structure (Fig. 9).

Regarding claim 22, Stone teaches the honeycomb core material comprises aluminum (Note from Fig. 9).

Regarding claim 23, Stone teaches the invention as claimed but lacks reference to the thickness of the aluminum. It is extremely well known in the art to form support structure of aluminum with a thickness between **approximately** 0.015 and 0.004 inches. Emphasis added. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the aluminum of Stone have a thickness between 0.015 and 0.004 inches for the

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purpose of supporting the weight of the mirror while remaining light enough to be easily transportable.

Regarding claim 25, Stone teaches a solar collector comprising a glass mirror (GLASS); a front sheet (STEEL); a core (HONEYCOMB) comprising a honeycomb core material; and a back sheet (STEEL); wherein the back of the mirror is affixed to the front sheet, the front sheet is affixed to the core and the core is affixed to the back sheet (Fig. 9). Stone further teaches once the collector is formed the mirror, front sheet, core and back sheet remain intact as a stacked structure. Stone lacks reference to the use of a mandrel and foam. Nicolas teaches the use of a mandrel to form a curvature in a mirror (Fig. 6). Nicolas further teaches the use of a foam material to foam (77) the core of a solar collector (Fig. 6). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Stone invention include the mandrel and foam of Nicolas for the purpose of achieving a repeatable curvature to the mirror surface and allowing the mirror to take on a curved shape without having to cut and shape the aluminum of Stone.

### ***Response to Arguments***

Applicant's arguments filed August 24, 2005 have been fully considered but they are not persuasive.

Applicant argues that the foam of Nicolas is different than the foam of the current invention and therefore cannot be combined with Stone. The examiner does not understand how a difference between the current invention and the Nicolas reference impacts how the Nicolas



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reference may be combined with the Stone reference. The Nicolas reference is only used to teach a curved mirror and a mandrel. The foam is taught by Stone.

Applicant argues that the Nicolas reference does not create a curved mirror because it has small sections that are straight. The overall mirror of Nicolas is curved as shown in Fig. 6. The claim does not require anything like a continuous curve in the claim limitations, therefore the curved mirror shown in Nicolas meets the claimed limitations.

Applicant's arguments, see Amendment, filed August 24, 2005, with respect to the rejection(s) of claim(s) 1 under Stone have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Stone in view of Nicolas.

Applicant's arguments, see Amendment, filed August 24, 2005, with respect to claims 14 and 24 have been fully considered and are persuasive. The rejection of claims 14 and 24 has been withdrawn.

***Allowable Subject Matter***

Claims 14 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach or suggest the use of a mandrel to simultaneously construct curved solar collectors by stacking multiple collectors atop the mandrel. The Nicolas reference shows that the back surface of the collector formed over the mandrel is flat and therefore would not convey a curved shaped to any subsequent solar collector. Deminet (US 4,238,265) shows a mandrel (31) used to create a curved solar collector (Figs. 3 and 4), but fails to teach or suggest forming multiple collectors simultaneously despite the curved back surface of the collector. The examiner can find no motivation within the art or within the knowledge of one of ordinary skill in the art to teach stacking multiple collectors on the Deminet mandrel for simultaneous construction.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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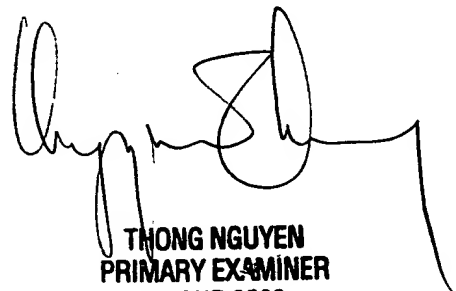
however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L. Pritchett whose telephone number is 571-272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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